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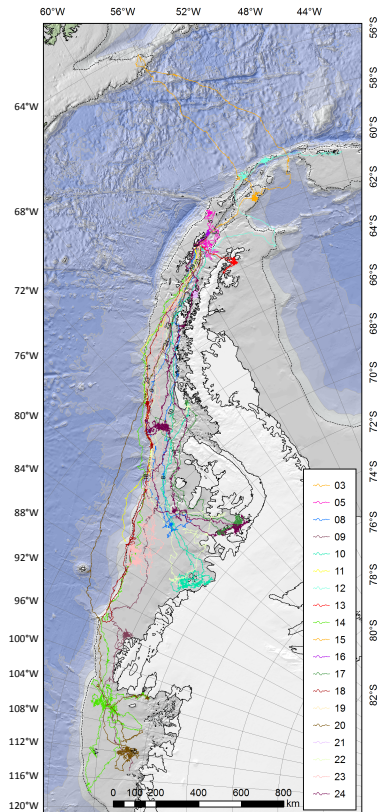
Summer foraging hot spots of post-breeding southern elephant seal males from King George Island / Isla 25 de Mayo

Deployments

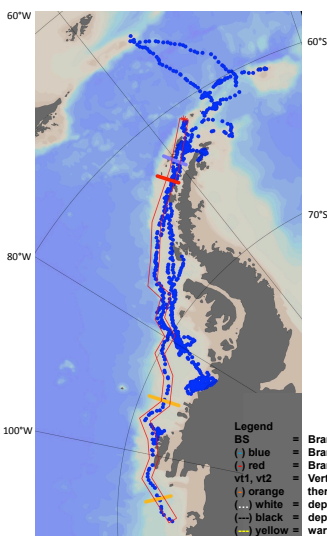
Deployments of ARGOS satellite tags on 19 post-breeding adult southern elephant seal males at King George Island (KGI) / Isla 25 de Mayo in November 2013 represent a follow-up study of earlier projects on post-moulting adult males satellite tagged in 2000 and 2010. The previous deployments were constrained by the fact that only a small fraction of the satellite tagged seals could be unequivocally attributed to the local breeding population of the Antarctic Specially Protected Area (ASP) 132 on KGI / Isla 25 de Mayo due to earlier permanent marking procedures. As a result, a number of the previous tracks ended at South Georgia towards the breeding season, implying that the tagged seals originated from that breeding colony. The recent tracks result from the first deployments on post-breeding males at the ASPA 132 and they include about 50% of the population of adult males that were present during the breeding period between October and December 2013.

Bathymetry

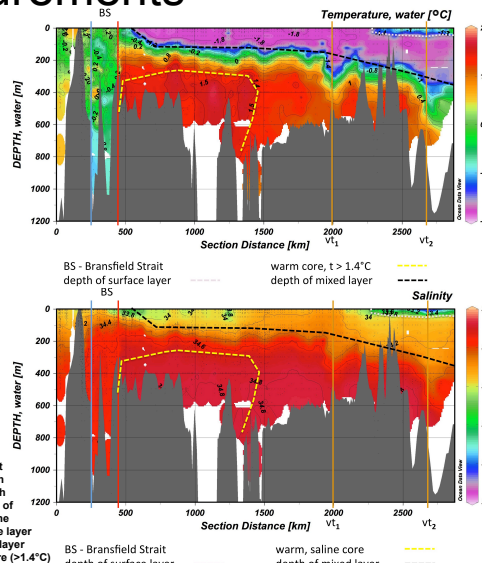
The post-breeding long-distance foraging tracks of 17 males (two tags failed prematurely) were primarily oriented along the continental shelf margin towards the Bellingshausen and even Amundsen Seas (n = 12), and shorter tracks along the Bransfield Strait / Mar de la Flota to the North (n = 4) and around the tip of the Antarctic Peninsula (n = 1). This suggests far more south-westerly oriented foraging movements of mature males of the ASPA 132 elephant seal colony than previously assumed. Seals showed extended residence times at specific circumscribed at-sea locations, considered as foraging hot spots. These spots were widely distributed within the aforementioned marine areas and coincide with bathymetric features, such as slopes, bays and troughs. With two exceptions, movements were mainly associated with depths of less than 1,000 m. Extended residence times along troughs or bays seem to be more related with their contours rather than with their centres.



Seal-borne measurements



Eight seals instrumented with CTD-tags (SMRU) provided data on oceanographic features along their foraging tracks. Blue dots denote seal-borne CTD casts. A red frame marks a section from Bransfield Strait (55°W) via Bellingshausen to the Amundsen Sea (110°W). Colour bars correspond with those on the temperature and salinity plots (right).



Temperature and salinity distribution in the ocean region between Bransfield Strait and Amundsen Sea as measured by an elephant seal during the period from November 2013 to March 2014. Salinity values seem to be higher than those known from CTDs. A total of 1,748 CTD profiles have been recorded.

Oceanography

The sections of temperature and salinity along the continental shelf break (CSB) from east (left) to west (right) show the main water masses of the upper ocean ($\leq 1,200$ m). In the west, within the Bransfield Strait, the mixture between warm circumpolar and cold Weddell Sea waters is represented by the moderate temperatures of -0.5°C to $+0.5^{\circ}\text{C}$. Further to the west (450 km) the warm core of the Circumpolar Deep Water (CDW) dominates the water below the surface mixed layer (>130 m) with temperatures above $+1.4^{\circ}\text{C}$. This reflects the regional position of the Antarctic Circumpolar Current (ACC) near to the CSB, also reducing the mixed layer in depth. Further to the west (1,500 km) the core of the warm pool is distant from the CSB allowing the surface mixed layer to increase its depth up to 300 m. At some positions, (orange lines at vt1 and vt2) the elephant seals dived further inshore on the shelf, where the surface mixed layer depth is even deeper (> 300 m) than offshore.

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